

EESAT 2005 ELECTRICAL ENERGY STORAGE APPLICATIONS AND TECHNOLOGIES CONFERENCE

Schedule of Events

Sunday, October 16 (Mezzanine)

4:00 PM Conference Registration

6:00 PM Welcoming Reception

Monday, October 17 (The Empire Room)

7:15 AM Registration (All Day) and Continental Breakfast

8:30 AM Welcoming Remarks Imre Gyuk, *US Dept. of Energy (DOE)*
Bill Hassenzahl, *Electricity Storage Association (ESA)*

8:50 AM Keynote Speaker Kevin Kolevar, *US Dept. of Energy (DOE)*

Economics and Policy I Chair: Anthony Price

9:15 AM Estimating the Value of Electricity Storage: Some Size, Location and Market Structure Issues Thomas Jenkin, *National Renewable Energy Lab (NREL)*

9:45 AM Balancing Costs and Benefits with a Combination of Storage and Generation Jim McDowall, *Saft America, Inc. (SAFT)*

10:10 AM Break

10:30 AM Deployment of Distributed Energy Storage System at American Electric Power Larry Dickerman, *American Electric Power (AEP)*

11:00 AM Economic Opportunity of Storage Systems and Distributed Production Plants as Alternatives to 1- to 10-MW Power Generating Units for Energy First Aid or Rubbing-out Periods in Industrial Sites Régine Clavreul, *Electricité de France (EDF)*

11:30 AM Lunch (*Franciscan Room*)
Luncheon Speaker - Dr. Martha Krebs, CEC / PIER Program (California Energy Commission / Public Interest Energy Research)

Economics and Policy II Chair: Ali Nourai

1:00 PM Energy Storage: Why So Few Pay Attention Jason Makansi, *Pearl Street*

1:30 PM Evaluating Risk-adjusted Cost for Electric Utility T&D Using Modular Distributed Energy Resources James Eyer, *Distributed Utility Associates (DUA)*

2:00 PM Benefit and Cost Comparisons of Energy Storage Technologies for Three Viable Emerging Value Propositions Susan Schoenung, *Longitude 122 West, Inc.*

2:25 PM Break

NYSERDA / DOE Energy Storage Initiative Chair: Imre Gyuk

2:45 PM Advanced 1-MW, 7-MWh, Peak-shaving, Sodium-sulfur Battery Energy Storage Project at Long Island Bus Yan Kishinevsky, *New York Power Authority (NYPA)*

3:15 PM Residential Energy Storage and Propane Fuel Cell Demonstration Project by the Delaware County Electric Cooperative, Inc. Mark Schneider, *Delaware County Electric Co-op. , Inc. (DCEC)*

3:45 PM Electric Energy Storage: Opportunities and Challenges in New York State Rahul Walawalkar, *Customized Energy Solutions (CES)*

4:15 PM Mini-compressed Air Energy Storage for Transmission Congestion Relief and Wind Shaping Applications Jim Jewitt, *Tadanac Energy Advisors*
Michael Fischbach, *Blick & Veatch*

4:45 PM Status Update on the NYSERDA/DOE Joint Energy Storage Initiative Projects Jeff Lamoree, *ENERNEX*

5:30 - 7:30 PM RECEPTION — Courtesy of the Electricity Storage Association (ESA)

Schedule of Events

CONCURRENT SESSIONS

Tuesday, October 18 Concurrent Session 1 (The Empire Room)

7:00 AM Registration (All Day) and Continental Breakfast

Advanced Batteries Chair: Jim McDowall

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| 8:00 AM | Bipolar Nickel-Metal Hydride High-power and Energy Storage Batteries for Utility Applications | James Landi,
<i>Electro Energy Inc. (EEI)</i> |
| 8:30 AM | The Design of VRLA Batteries for Successful Operation in a High-rate, Partial-state-of-charge Regime | Patrick Moseley,
<i>International Lead Zinc Research Organization, Inc. (ILZRO)</i> |
| 9:00 AM | Field Test Results for a 1-kW, 50-kWh Vanadium Redox Flow Battery | Martha Schreiber,
<i>Funktionswerkstoffe F & E GmbH</i> |
| 9:25 AM | Break | |

Electro-Chemical Capacitors Chair: Ben Norris

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| 9:45 AM | Accelerated Cycle-life Testing on the Cyclon Lead-acid Battery | Tom Hund,
<i>Sandia National Laboratories</i> |
| 10:15 AM | Ultracapacitors and Batteries in Wind Power Systems Control and Operation | Raili Alanen,
<i>VTT Processes</i> |
| 10:45 AM | Status Report 2005 on Capacitor Storage Systems - ECaSS® | Michio Okamura,
<i>Power Systems Co.</i> |
| 11:15 AM | Principle of Hybrid Energy Storage Systems Based on Hydro-pneumatics and Supercapacitors for Distributed Generation and Renewable Energy Sources Support | Sylvain Lemoufouet,
<i>Swiss Federal Institute of Technology (EPFL)</i> |
| 11:45 AM | Lunch (<i>Franciscan Room</i>) | |

Alternative Concepts Chair: Joe Waligorski

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| 12:50 PM | Pumped Storage for the Distributed Generation Market | John Halloran,
<i>ProPower Resources, Inc.</i> |
| 1:20 PM | Delta Tandem Kinetic Battery Concepts | Dale Van Cor,
<i>Van Cor Transmission</i> |
| 1:50 PM | Test and Evaluation of Heat Transfer Parameters for Transportable CAES Tank System | Paul Lieberman,
<i>Lieberman Research Associates</i> |
| 2:25 PM | Break | |

Flywheels Chair: Fred Schwartz

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| 2:35 PM | Challenges and Solutions for the Use of Flywheel Energy Storage in High-power Applications | John Herbst,
<i>University of Texas at Austin</i> |
| 3:05 PM | Use of Flywheels in High-cycling Applications | Octavio Solis,
<i>Vycon, Inc.</i> |
| 3:35 PM | Improvement of Electric Power Quality Using a Small Flywheel with a Squirrel-cage Induction Motor | Shuhei Kato,
<i>Tokyo Institute of Technology (TITECH)</i> |
| 4:05 PM | Results From A 750 kVA Flywheel-UPS Demonstration | Frank DeLattre,
<i>Penta Dyne</i> |
| 4:35 PM | Design, Fabrication, and Testing of a 5-kWh Flywheel Energy Storage System Utilizing a High Temperature Superconducting Magnetic Bearing | Philip Johnson,
<i>Boeing Phantom Works</i> |
| 6:00 - 10:00 PM | Dinner Event at <i>The Carnelian Room</i> | |

Schedule of Events

CONCURRENT SESSIONS

Tuesday, October 18 Concurrent Session 2 (The Cypress / Monterrey Rooms)

7:00 AM Registration (All Day) and Continental Breakfast

Renewable and Distributed Energy Chair: Mark Kuntz

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| 8:00 AM | Dependable Energy Supply from Fluctuating Natural Sources - A Case for Energy Storage | Werner Leonhard,
<i>Technical University at Braunschweig, Germany</i> |
| 8:30 AM | Australian Government Support for Renewable Energy and the Advanced Electricity Storage Technologies Programme | Denis Smedley,
<i>Australian Greenhouse Office</i> |
| 9:00 AM | Using Energy Storage to Ease Integration of Wind Generation with the Power Grid | Steve Eckroad,
<i>Electric Power Research Institute (EPRI)</i> |
| 9:25 AM | Break | |
| 9:45 AM | Subaru Project: Field Test of Energy Storage Systems for Stabilization of 30.6-MW Wind Farm | Gentaro Koshimizu,
<i>Electric Power Development, Ltd.</i> |
| 10:15 AM | Optimizing Off-grid Hybrid Generation Systems | Garth Corey,
<i>Sandia National Laboratories</i> |
| 10:45 AM | Overcoming Transmission Constraints: Energy Storage and Wyoming Wind Power | Mindi Farber de Anda,
<i>Science Applications International Corporation (SAIC)</i> |
| 11:15 AM | HybSim 3.3 - Hybrid Generation Simulator Model | David Trujillo,
<i>Sandia National Laboratories</i> |
| 11:45 AM | Lunch (<i>Franciscan Room</i>) | |
| 12:50 PM | Impact of CAES on Wind in Texas, Oklahoma, and New Mexico | Jim Jewitt,
<i>Tadanac Energy Advisors, Ridge Energy Storage & Grid Services</i> |

Power Electronics I Chair: Bill Hassenzahl

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| 1:20 PM | An Approach to Improving the Physical and Cyber Security of a Bulk Power System with FACTS | Mariesa Crow,
<i>University of Missouri - Rolla (UMR)</i> |
| 1:50 PM | Progress on a 100-kw, Low-cost Energy Storage Inverter | Larry Rinehart,
<i>Rinehart Motion Systems</i> |
| 2:15 PM | Break | |

Power Electronics II Chair: Stan Atcitty

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| 2:35 PM | Progress on a Transmission Ultracapacitor (TUCAP) – Integrating Emitter Turn-off (ETO) Thyristor with an Electrochemical Capacitor | Chong Han,
<i>North Carolina State University (NCSU)</i> |
| 3:05 PM | High-power Silicon Carbide Inverter Design – 100-kW Grid Connect Building Blocks | Leo Casey,
<i>SatCon Technology, Inc (SatCon)</i> |
| 3:35 PM | An Advanced Power Converter System Based on High-temperature, High-power-density SiC Devices | Timothy Lin,
<i>Aegis Technologies</i> |
| 4:05 PM | A Very-high-temperature (400+ C°) Inverter for Energy Storage Applications Utilizing Silicon on Insulator (SOI) and Silicon Carbide (SiC) Electronics | Roberto Schupbach,
<i>Arkansas Power Electronics, Int'l (APEI)</i> |
| 4:35 PM | (Return to The Empire Room for final presentations of the day) | |
| 6:00 - 10:00 PM | Dinner Event at The Carnelian Room | |

Schedule of Events

Wednesday, October 19 (The Empire Room)

7:00 AM Registration (All Day) and Continental Breakfast

Compressed Air Energy Storage — CAES Chair: Steve Eckroad

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| 8:00 AM | Integrated Wind Energy with Compressed Air Energy Storage for Dispatchable Generation | Jeffery Greenblatt,
<i>Princeton University</i> |
| 8:30 AM | Compressed Air Energy Storage (CAES) Coupled with GasTurbine Air Injection (AI) Makes Renewables and Wind Power More Economic | Michael Nakhamkin,
<i>Energy Systems and Power Consultants (ESPC)</i> |
| 9:00 AM | Thermal And Compressed-Air Storage (TACAS): The Road To Commercialization | John Sears,
<i>Active Power</i> |
| 9:25 AM | Break | |

CEC / DOE Energy Storage Collaboration Chair: John Boyes

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| 9:45 AM | Ultracapacitor EnergyBridge™ UPS for Palmdale Water District | Chris McKay,
<i>Northern Power Systems</i> |
| 10:15 AM | Flywheel-based Frequency Regulation Demonstration Projects | Matthew Lazarewicz,
<i>Beacon Power</i> |
| 10:45 AM | Demonstration of a 2-MWh Peak Shaving Z-BESS | Peter Lex,
<i>ZBB Energy Corporation</i> |
| 11:15 AM | Web-based Energy Storage Monitoring – Interim Results of the CEC / DOE Demonstrations | Doug Dorr,
<i>EPRI Solutions</i> |
| 11:45 AM | Lunch (<i>Franciscan Room</i>)
Closing Remarks - Imre Gyuk (<i>DOE</i>) and Jim McDowall (<i>ESA</i>) | |
| 1:20 PM | Board buses | |
| 1:35 - 6:00 PM | DUIT Facility Tour — <i>The first full-scale, integration test of commercial-grade, utility grid interactive Distributed Energy Resources (DER) in the United States.</i> | |